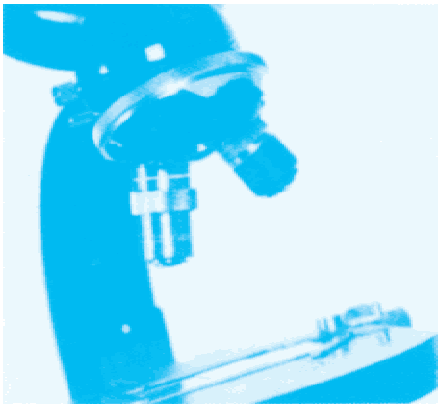

Toolbox

Herbal medicine

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BACKGROUND

The use of plants for healing purposes predates recorded history and forms the origin of much of modern medicine. Many conventional drugs originate from plant sources: a century ago, most of the few effective drugs were plant-based. Examples include aspirin (from willow bark), digoxin (from foxglove), quinine (from cinchona bark), and morphine (from the opium poppy). The development of drugs from plants continues, with drug companies engaged in large-scale pharmacologic screening of herbs.

Chinese herbalism is one of the most prevalent of the ancient herbal traditions currently practiced. It is based on concepts of yin and yang and of *Qi* energy. Chinese herbs are ascribed qualities such as "cooling" (yin) or "stimulating" (yang) and are used, often in combination, according to the deficiencies or excesses of these qualities in the patient.

Modern Western herbalism emphasizes the effects of herbs on individual body systems. For example, herbs may be used for their supposed anti-inflammatory, hemostatic, expectorant, antispasmodic, or immunostimulatory properties.

Consumer spending on herbal products in the United States is estimated to be more than $5 billion per year, mainly from self-prescription of over-the-counter products. This type of herbal drug use is typically based on a simple matching of a particular herb to particular diseases or symptoms—such as valerian (*Valeriana officinalis*) for sleep disturbance. Originally confined to health food shops, herbal remedies are now marketed in many conventional pharmacies and retail stores.

Differences from conventional drug use

Although superficially similar, herbal medicine and conventional pharmacotherapy have important differences.

Summary points

- Herbal medicine differs from conventional medicine in its use of whole plants, generally as an unpurified extract; herb combining (polypharmacy); and diagnostic principles based on treating "underlying causes"
- Practitioners of herbal medicine tend to concentrate on treating chronic conditions and improving well-being
- Because many plants are toxic, herbal medicine probably presents a greater risk of adverse effects than other complementary therapies
- The potential for interactions of herbal products with conventional drugs exists and some interactions have been well-characterized

Use of whole plants

Practitioners of herbal medicine generally use unpurified plant extracts containing several different constituents. Typically, they claim that these can work together synergistically so that the effect of the whole herb is greater than the sum total of the effects of its components. They also claim that toxicity is reduced when whole herbs are used instead of isolated active ingredients ("buffering"). Although 2 samples of a particular herbal drug may contain constituent compounds in different proportions, practitioners claim that this does not generally cause clinical problems. Some experiments have yielded evidence of synergy and buffering in certain whole plant preparations, but how far this is generalizable to all herbal products is not known.

Herb combining

Several different herbs often are used together. Practitioners say that the principles of synergy and buffering apply to combinations of plants and claim that combining herbs improves efficacy and reduces adverse effects. Herb combining contrasts with conventional practice, in which polypharmacy is generally avoided whenever possible.

Diagnosis

Herbal practitioners use diagnostic principles that differ from those used by conventional practitioners. For example, when treating arthritis (see box), herbal practitioners might observe "underfunctioning of a patient's systems of elimination" and decide that the arthritis results from "an accumulation of metabolic waste products." A diuretic, choleretic, or laxative combination of herbs might then be prescribed alongside herbs with anti-inflammatory properties.

WHAT HAPPENS DURING A TREATMENT?

Herbal practitioners take extensive case histories and perform a physical examination.

Example of an herbal prescription for osteoarthritis

- Turmeric (*Curcuma longa*) tincture 20 mL—For anti-inflammatory activity and to improve local circulation at affected joints
- Devil's claw (*Harpogophytum procumbens*) tincture 30 mL—For anti-inflammatory activity and general well-being
- Ginseng (*Panax* spp) tincture 10 mL—For weakness and exhaustion
- White willow (*Salix alba*) tincture 20 mL—For anti-inflammatory activity
- Licorice (*Glycyrrhiza glabra*) 5 mL—For anti-inflammatory activity and to improve palatability and absorption of herbal medicine
- Oats (*Avena sativa*) 15 mL—To aid sleep and for general well-being

While patients describe their medical history and current symptoms, practitioners pay particular attention to the state of everyday processes such as appetite, digestion, urination, defecation, and sleep. They then prescribe individualized combinations of herbs, usually taken as tinctures (alcoholic extracts) or teas. Syrups, pills, capsules, ointments, and compresses may also be used. Oral preparations often have an unpleasant taste and odor.

In addition to the herbal prescription, practitioners may work with their clients to improve diet and other lifestyle factors, such as exercise and emotional issues. Follow-up appointments occur after 2 to 4 weeks. Progress is reviewed and changes are made to choice of drugs, doses, or regimen as necessary.

THERAPEUTIC SCOPE

Although herbal preparations are widely used as self-medication for acute conditions, practitioners of herbal medicine tend to concentrate on treating chronic conditions. A typical caseload might include patients with asthma, eczema, premenstrual syndrome, rheumatoid arthritis, migraine, menopausal symptoms, chronic fatigue syndrome, and irritable bowel syndrome. Herbalists do not tend to treat acute mental or musculoskeletal disorders.

Chinese herbalism is a prevalent traditional herbal practice in the United States

The aim of herbal treatment is usually to produce persisting improvements in well-being. Practitioners often talk in terms of trying to treat the "underlying cause" of disease and may prescribe herbs aimed at correcting patterns of dysfunction rather than targeting the presenting symptoms. Many practitioners do, however, prescribe symptomatically as well, such as giving a remedy to aid sleep in a patient with chronic pain.

Research evidence

In laboratory settings, plant extracts have been shown to have, among others, anti-inflammatory, vasodilatory, antimicrobial, anticonvulsant, sedative, and antipyretic effects. In a typical study, an infusion of lemongrass leaves produced a dose-dependent reduction of experimentally induced hyperalgesia in rats.

Studies in human subjects also confirm specific therapeutic effects of particular herbs. Randomized controlled trials support the use of ginger for treating nausea and vomiting, feverfew (*Chrysanthemum parthenium*) for migraine prophylaxis, and ginkgo (*Ginkgo biloba*) for intermittent claudication and dementia. The best-known evidence about a herbal product concerns St John's wort (*Hypericum perforatum*) for treating mild-to-moderate depression. A systematic review of 23 randomized controlled trials found the herb to be significantly superior to placebo and therapeutically equivalent to, but with fewer side effects than, antidepressants such as amitriptyline.

There is still, however, little evidence on the effectiveness of herbalism as practiced—that is, using principles such as combining herbs and unconventional diagnosis. The closest attempt to a randomized study of herbalism in everyday clinical practice was an evaluation of a traditional Chinese herbal treatment of eczema. Because prescriptions depend on patients' exact presentations, only those with widespread, nonexudative eczema were included in this study. Eighty-seven adults and children, refractory to conventional first- and second-line treatment, were randomly assigned to a crossover study that compared a preparation of about 10 Chinese herbs with a placebo consisting of herbs thought to be ineffective for eczema. Highly significant reductions in eczema scores were associated with active treatment, but not with placebo. At long-term follow-up, over 50% of the adults (12/21) and over 75% of the children (18/23) who continued treatment had a greater than 90% reduction in eczema scores.

Key studies of efficacy

Systematic reviews

- Linde K, Ramirez G, Mulrow CD, Pauls A, Weidenhammer W. St John's wort for depression—an overview and meta-analysis of randomised clinical trials. *BMJ* 1996;313:253-258
- Melchart D, Linde K, Fischer P, Kaesmayr J. Echinacea for preventing and treating the common cold. *Cochrane Library*. Issue 3. Oxford, UK: Update Software, 1999
- Wilt TJ, Ishani A, Stark G, MacDonald R, Lau J, Mulrow C. Saw palmetto extracts for treatment of benign prostatic hyperplasia: a systematic review. *JAMA* 1998;280:1604-1609

Randomized controlled trials

- Sheehan MP, Rustin MH, Atherton DJ, et al. Efficacy of traditional Chinese herbal therapy in adult atopic dermatitis. *Lancet* 1992;340:13-17

SAFETY

Many plants are highly toxic. Herbal medicine probably presents a greater risk of adverse effects and interactions than any other complementary therapy. Serious adverse events after administration of herbal products have been reported, and in most cases, the

Sources of information on safety of herbal products

Food and Drug Administration
www.fda.gov. tel 1-888-463-6332

American Association of Poison Control Centers
www.aapcc.org/

Herb Research Foundation
1007 Pearl St, Suite 200, Boulder, CO 80302. tel 303-449-2265. www.herb.org

American Botanical Council
PO Box 144345, Austin, TX 78714-4345. tel 512-926-4900. www.herbalgram.org

Herbal remedies are available in a variety of formulations

herbs involved were self-prescribed and bought over the counter or were obtained from a source other than a registered practitioner. In the most notorious instance, several women developed rapidly progressive interstitial renal fibrosis after taking Chinese herbs prescribed by the staff of a weight loss clinic.

Herbal products may be contaminated, adulterated, or misidentified. Adverse effects seem more common with herbs imported from outside Europe and North America. In general, patients taking herbal preparations regularly should receive careful follow-up and have access to appropriate biochemical monitoring.

As with many complementary therapies, information on the prevalence of adverse effects and interactions is limited. The US Food and Drug Administration may be notified of such events, but without a more systematic reporting scheme, the incidence of such events will remain unknown.

Interactions of herbal products with conventional drugs have been described. Some well-characterized interactions exist (see table), and competent medical herbalists are trained to take a detailed drug history and to avoid these combinations. Other interactions are not clearly defined. Problems are more likely to occur with less-qualified practitioners, more unusual combinations of agents, patients taking several conventional drugs, and those who self-prescribe herbal medicines. If patients are taking conventional drugs, herbal preparations should be used with extreme caution and only on the advice of a herbalist familiar with the relevant conventional pharmacology.

Main regulatory and registering bodies in herbal medicine

American Herbalists Guild
PO Box 70, Roosevelt, UT 84066. tel 435-722-8434. www.healthy.net/herbalists/Index.html

American Asssociation of Naturopathic Physicians
8201 Greensboro Drive, Suite 300, McLean, VA 22102. tel 703-610-9037. www.naturopathic.org

PRACTITIONERS

Herbal medicine use in the United States is practiced by a variety of health care practitioners, including physicians, osteopaths, and

A substantial evidence base supports the use of St John's wort for treating mild-to-moderate depression

Several herbal products interact with conventional drugs, such as echinacea (left) with anabolic steroids and valerian (right) with barbiturates

Table 1 *Important potential interactions between herbal preparations and conventional drugs**

Herb	Conventional drug	Potential problem
Echinacea used longer than 8 wks	Anabolic steroids, methotrexate, amiodarone, ketoconazole	Hepatotoxicity
Feverfew	Nonsteroidal anti-inflammatory drugs	Inhibition of herbal effect
Feverfew, garlic, ginseng, ginko, ginger	Warfarin sodium	Altered bleeding time
Ginseng	Phenelzine sulfate	Headache, tremulousness, manic episodes
Ginseng	Estrogens, corticosteroids	Additive effects
St John's wort	Monoamine oxidase inhibitor and serotonin reuptake inhibitor antidepressants	Mechanism of herbal effect uncertain. Insufficient evidence of safety with concomitant use—therefore not advised
St John's wort	Antiretrovirals, digoxin, theophylline, cyclosporin, oral contraceptives	Decreased clinical effect
Valerian	Barbiturates	Additive effects, excessive sedation
Kyushin, licorice, plantain, uzara root, hawthorn, ginseng	Digoxin	Interference with pharmacodynamics and drug level monitoring
Evening primrose oil, borage	Anticonvulsants	Lowered seizure threshold
Shankapulshpi (Ayurvedic preparation)	Phenytoin	Reduced drug levels, inhibition of drug effect
Kava kava	Benzodiazepines	Additive sedative effects, coma
Echinacea, zinc (immunostimulants)	Immunosuppressants (such as corticosteroids, cyclosporin)	Antagonistic effects
Kelp	Thyroxine	Iodine content of herb may interfere with thyroid replacement
Licorice	Spironolactone	Antagonism of diuretic effect
Karela, ginseng	Insulin, sulfonylureas, biguanides	Altered glucose concentrations. These herbs should not be prescribed in diabetic patients

*Data from Miller LG. Herbal medicinals: selected clinical considerations focusing on known or potential drug-herb interactions. *Arch Intern Med* 1998;158:2200-2211.

naturopaths. Many traditional healers, such as Chinese, Native American, Tibetan, and Ayurvedic practitioners, use herbs as part of their practice. Herbal medicine practitioners generally work in solo practice or in complementary medicine clinics.

Training

The many different courses in herbalism vary substantially in course content. The American Herbalists Guild has published guidelines for course length (1,200 study hours and 400 clinical hours) and content, including instruction in anatomy, physiology, pathology, therapeutic herbalism, herbal pharmacology, botany, and clinical skills. Training in Chinese herbalism may be an additional part of a training program in acupuncture or it may stand on its own. Credentialing and certification in the United States is still lacking for physicians and osteopaths who use herbs in their practice.

Regulation of practitioners

The American Herbalists Guild is the only US-based peer-review organization for professional herbalists specializing in the medicinal use of plants. It maintains a register of members who have been evaluated and recognized by an admissions committee as having suitable training and experience.

Regulation of herbal products

In 1994, the US Congress passed the Dietary Supplement Health and Education Act, which determined that botanical substances would be classified as food supplements and their use would not require prescription. Requirements concerning quality control of these products are left to the discretion of the manufacturer. Medical claims on labels are, however, restricted.

Authors: At the time of writing, Catherine Zollman and Andrew Vickers worked for the Research Council for Complementary Medicine, London.

Further reading

Mills S. *The Essential Book of Herbal Medicine.* London: Arkana; 1993

Newall CA, Anderson LA, Phillipson JD. *Herbal Medicines. A Guide for Health-Care Professionals.* London: Pharmaceutical Press; 1996